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National Soil Dynamics Laboratory

Conservation Systems Research

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Conservation Systems Research

Evaluation of Synergism/Antagonism from Tank-Mixed Envoke and Glyphosate on Weed Control and Cotton Injury

RESEARCH PROJECT DESCRIPTION NO. 37

Tank-Mixed Envoke and Glyposate Experiment – Cotton Response

Researchers

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The Challenge

Envoke® is a new postemergence herbicide that will likely be registered in both conventional and transgenic cotton varieties. Most producers are currently growing glyphosate-resistant (Roundup Ready™) cotton. Because Envoke is effective for some weeds on which glyphosate has little efficacy, tank-mixing Envoke with glyphosate may look attractive to cotton growers. However, little research has been conducted investigating weed control and cotton response provided by tank-mixes of these two compounds. The challenge is to determine if tank-mixed Envoke® and glyphosate result in synergistic/antagonistic weed control or cotton injury and/or reduced yield.

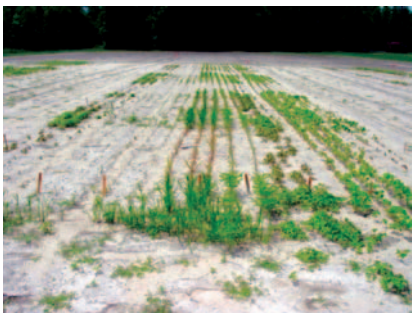
The Experiment

Field experiments were conducted in AL and MS in 2003. Barnyardgrass, browntop millet, pitted morningglory, prickly sida, velvetleaf, sicklepod, and hemp sesbania were drilled into a prepared cotton seedbed. Envoke and glyphosate were applied alone and in tank-mix at two weed sizes (2 and 5 leaf). Weed control was visually estimated at 2 and 3 weeks after treatment. Also, glyphosate resistant cotton was established and treated preemergence with Cotoran plus Prowl. At cotton 3 leaf stage, Envoke alone, glyphosate alone, or a tankmix thereof was applied. At cotton 6 leaf stage, similar treatments were applied postemergence-directed. Envoke was also applied overtop at 6 leaf and 9 leaf to observe injury and yield.

Envoke with glyphosate has potential to improve control of pitted morningglory and hemp sesbania compared to glyphosate alone with little to no reduction in cotton yield

What We Have Learned

Glyphosate controlled barnyardgrass, johnsongrass, prickly sida, and sicklepod 88 to 100% and Envoke controlled these same species 10 to 81%. The addition of Envoke to glyphosate improved control of pitted morningglory and hemp sesbania 23 and 57% compared with glyphosate alone. Cotton injury at 2 WAT was less than 13% for all herbicide treatments and less than 5% by 3 WAT. Number of open and unopened bolls and number of nodes per plant was not different across all treatments. Seed cotton yield ranged from 1429 to 1658 kg/ha, and only the sequential over-the-top applications of Envoke reduced cotton yield compared to weed-free check. Mixing Envoke with glyphosate has potential to improve control of pitted morningglory and hemp sesbania compared to glyphosate alone with little to no reduction in cotton yield.



Tank-Mixed Envoke and Glyphosate Experiment – Weed Response.